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TRENDS IN SOVIET ARMAMENT PRODUCTION

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TRENDS IN SOVIET ARMAMENT PRODUCTION

The Problem

It has been suggested that the year 1951 seems to mark the beginning of a serious Soviet rearmament effort. ^{1/*} The present paper reviews the available evidence for and against this hypothesis, with a view toward determining the trend in Soviet rearmament over the postwar period, and particularly in 1951-52.

Conclusions

The evidence examined in this paper leads to the conclusion that the growth of the Soviet gross national product has made it possible for the Soviet planners to allocate larger relative shares of this product to defense and gross investment while still permitting a modest absolute increase in aggregate consumption. Perhaps the best single indicator of the trend in Soviet rearmament is the index based on budget allocations to defense diminished by outlays for military personnel, operation, and maintenance, leaving a residue that is roughly a measure of major military procurements. The index based on such residues, corrected for price changes, shows that procurements in 1951 were more than twice as great as in 1947 and over 20 percent greater than in 1950. If the size of the personnel component of the Soviet armed forces in 1952 remains unchanged with respect to the immediately preceding years, then the estimated 1952 defense budget destined for major procurements would represent roughly at least a 26 percent increase over 1951. These considerations suggest that the annual rate of increase in defense procurements in 1951-52 exceeds the realized and projected rate of increase for gross investment in these years. In terms of aggregates, however, it is not likely that investment will decline in 1952 but rather that its rate of increase will be dampened.

There are no positive indications that the decline in tractor deliveries to agriculture represents a corresponding rise in output of tanks. The smaller deliveries to agriculture can be accounted for in terms of adequacy of the present park and the larger deliveries of self-propelled agricultural machines and of tractors for forestry and other uses. It should be emphasized

* Footnote references in arabic numerals are to sources listed in the Appendix.

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that the foregoing is not a full accounting and that there may have been some conversion to tank production. The relative declines in the rate of growth of output of items substitutable for armaments -- such as trucks, locomotives, and rolling stock -- which were omitted from the Soviet official report of the 1951 annual plan fulfillment should be regarded as a reflection of two developments: (1) declining rate of growth of the Soviet economy following its rapid recovery from World War II and (2) selective deferment of expansion of output of these items in favor of growing armament production or conversion of facilities for that purpose. Such data as are available indicate that the output of conventional armaments did not increase in proportion to the allocations available for major procurements. This result would be in accord with an expansion of allocations to research and development and the production of military prototypes, and a selective conversion of industrial facilities to the production of the newly developed weapons.

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1. Evidence from an Analysis of Gross National Product.

From an examination of the disposition and real changes of the Soviet gross national product, it is possible to obtain a broad aggregative indication of the direction of Soviet economic effort in general and, in particular, the trends in the development of its major components, including allocations to defense. The present inquiry is concerned primarily with changes in Soviet outlays for military purposes from year to year and less with the magnitude of the Soviet defense effort in comparison with that of another country or group of countries. A fairly comprehensive definition consistently applied may be expected to reflect the dynamics of Soviet rearmament, provided that the omissions from the definition be relatively small. It is felt that the definition employed in this paper is satisfactory for this purpose, although the data presented below are not necessarily comparable with other computations using the same terminology.* A definitive conclusion would require a careful comparison of magnitudes under various definitions for every year indicated in the tables. This is not undertaken here, since the present approach is intended to give, at best, only a rough indication of trends in relative shares in the national product. A closer approach to the problem of trends in production of armaments is presented in later sections of this paper.

Table 1** shows the percentage shares of the Soviet gross national product allocated to defense, investment, consumption, and government administration for selected postwar years. This distribution is based on calculations in "adjusted rubles" in an attempt to correct for distortions in the Soviet price system introduced by the high rate of turnover tax on consumer goods, the multiple prices for agricultural commodities, and state subsidies to certain branches of industry.

Table 1 shows that the relative share of the gross national product allocated to defense had risen by 1951 from a postwar low to a level approximating that of 1940. The fact that the real gross national product had increased roughly by about 25 percent over 1940 implies, however, a corresponding increase in the absolute share of the product allocated to

* The definition of "defense" used in this paper covers outlays for the maintenance and equipment of military forces and installations, including the pay, allowances, food, and clothing of troops; procurement of munitions, equipment, and supplies; some construction and repair of military and naval facilities; and miscellaneous outlays directly connected with the military establishment. It excludes defense plant construction, atomic energy installations, stockpiling of strategic raw materials, and other centralized commodity reserves, which are placed under gross investment. The comparability of various definitions of military expenditures has been discussed in another paper, together with various estimates indicating the magnitude of 1952 Soviet budget outlays for defense. 2/

** Table 1 follows on p. 4.

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defense. The large relative share allocated to gross investment in 1951 provides a first reserve for diversion to defense production on account of the similarity in outputs of the investment goods and defense industries. Since the calculations underlying the allocation of the gross national product for 1951 in Table 1 were based chiefly on such evidence of Soviet plans as was available, they do not reveal any changes in plans that might have occurred during the year. The immediate problem, therefore, is to determine whether, in fact, such diversion had occurred on a substantial scale during the past year.

Table 1

Percentage Disposition of the Gross National Product of the USSR
for Selected Years
Based on Calculations in "Adjusted Rubles" 2/

	<u>1937</u>	<u>1940</u>	<u>1944</u>	<u>1948</u>	<u>1951 Plan</u>
Defense	8	15	38	13	15
Gross Investment	23	16	12	24	27
Personal and Communal Consumption	66	65	47	58	54
Government Administration	3	4	3	5	4
Gross National Product	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

The relative shares shown in Table 1 have been applied to the development of the real gross national product for the years indicated in order to obtain the indexes of real changes in the components as set forth in Table 2.*

Since the gross national product increased by about 25 percent from 1940 to 1951, the quantity of resources devoted to defense and investment in the postwar period increased even more markedly than indicated by Table 1. Even the smaller relative share for consumption in 1951 as compared to 1940 signifies a larger absolute share in the latter year, although it does not necessarily signify an absolute per capita increase. The increase in the quantity of resources going into armament production in the postwar period in all probability should be greater than Table 2 suggests. This conclusion follows from the fact that outlays for armed forces personnel have remained fairly stable in view of the relative fixity in the size of the Soviet armed forces. Thus the increments to defense represent primarily an expansion of defense activities other than those connected with personnel pay

* Table 2 follows on p. 5.

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and maintenance. It does not necessarily follow that the output of conventional armaments has increased correspondingly, since these increments may be applied to development of new types of military end items as well as to expanded production of conventional ones.

Table 2

Indexes of the Soviet Real Gross National Product
and Its Major Components
for Selected Years
1940 = 100

	<u>1937</u>	<u>1940</u>	<u>1944</u>	<u>1948</u>	<u>1951 Plan</u>
Real Gross National Product	85	100	70	100	125
Defense	45	100	177	87	125
Gross Investment	122	100	52	150	211
Personal and Communal Consumption	86	100	51	89	104
Government Administration	64	100	54	125	125

2. Defense Allotments in the Soviet Budget.

The trend of the Soviet Union's defense effort over the postwar years can be gauged roughly by the direct defense allocations in the Soviet budget. Clearly, pitfalls may be encountered in using such a procedure since there is no assurance that the direct defense outlays for the various years are supplemented in a directly proportional manner by the undisclosed budget outlays for military purposes. Table 3* provides a comparison of an index of defense expenditures based on direct budget allocations uncorrected for price changes with an index of real changes in defense expenditures computed by the Rand Corporation under the definitions used in Tables 1 and 2 and employing the gross national product valuation method described above.

Although the definition of defense expenditures employed by Rand (and used in the preceding tables) is not so comprehensive as the definition "preferred by ORR," it is quite probable that with the exception of defense industry constructions, the items omitted by Rand but included by ORR either are relatively small or remain relatively stable over the postwar period. ✓ If this is so, the trend in Soviet rearmament would not differ greatly under either definition. Moreover, even if defense industry construction were to be taken into

* Table 3 follows on p. 6.

account, it is not clear that a wide divergence of indexes would necessarily follow. A substantial part of this construction must represent atomic energy development, which may be presumed to be a sustained program very likely keeping pace with direct defense allocations over the postwar years, although there is no positive evidence at hand to confirm this presumption. The close correspondence which appears in Table 3 between the Rand index and the index based on direct budget expenditures seems to confirm the view that the direct budget outlays for defense are a fairly dependable guide to the trend (as distinguished from absolute magnitudes) in Soviet rearmament. On the other hand, the presence of unexplained items in the Soviet budget must temper the confidence placed in conclusions reached by this approach. Such unexplained items could augment the magnitude of defense outlays but could not diminish it. As far as the trend in the total defense effort is concerned, it is impossible to say offhand what effect the undisclosed items might have.

Table 3
Indexes of Soviet Rearmament
1944-52 a/

Year	Open Allotment for Armed Forces 5/ (Billion Rubles)	Index b/	Rand Index 6/
1944	137.7	100	100
1945	128.2	93	90
1946	73.6	53	55
1947	66.3	48	45
1948	66.3	48	49
1949	79.2	58	58
1950	82.9	60	65
1951	87.0 c/	63 d/	70 e/
1952	113.8 f/	83	

a. 1944 = 100.

b. Based on figures given in table.

c. 96.4 billion rubles, the budgeted allotment for defense, is the figure given in the source for the other figures in this column. The figure 87.0 is based on a separate estimate. 7/

d. 70 would be the index for 1951, corresponding to the budgeted allotment of 96.4 billion rubles. See footnote c, above.

e. A preliminary estimate.

f. Planned allotment.

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The one big difference between the two indexes in Table 3 is the difference between the figures for 1951, which arises primarily from a reduction of the planned direct defense expenditure of 96.4 billion rubles to an estimated actual outlay of 87.0 billion, a reduction which the Rand computation did not take into account. If the planned figure were used in both indexes, their values for 1951 would be identical. Both indexes show an increase in Soviet rearmament after the postwar low point reached in 1947-48. The planned direct expenditures for defense in 1952 represent a sharp increase over 1951. An actual outlay on the scale planned would represent a defense effort about four-fifths as great as in 1944.

An approximation to the trend in major procurements of military end items is shown in Table 4. Again, the roughness of the estimates must be stressed, and the reader is referred to the source for a full description of methods and assumptions.

Table 4

Estimated Composition of the Soviet Defense Budget by Purpose
(Billion Current Rubles)
1947-52 8/

<u>Composition of Defense Budget</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952 (Plan)</u>
Explicit Defense Appropriation	66	66	79	83	87	114
Supplementary Allocations	12	14	15	15	16	16
Total Military Budget	<u>78</u>	<u>80</u>	<u>94</u>	<u>98</u>	<u>103</u>	<u>130</u>
(1) Military Personnel Costs (Pay, Clothing, Subsistence, etc.)	38	34	32	30	28	28
(2) Military Construction	2	2	3	3	3	3
(3) Operation and Maintenance, Military Research, Transportation, etc.	15	15	20	20	21	25
(4) Major Procurements	23	29	39	45	51	74

The definition of defense used in drawing up Table 4 is the same as used for the Rand estimates on which the previous tables are based. Since it is believed that most of the major procurements are covered by the explicit appropriation for defense, the Rand definition of defense, which

is narrower than that "preferred by ORR," is not likely to distort the picture very significantly as regards procurements. Greater reserve is probably justified with reference to the allocation of the military budget among its components. The relative stability of military personnel costs (item (1) in the table) is a reflection of the comparatively fixed size of the armed forces over most of the years shown. 2/ The modest decline in costs over the years since 1949 is mostly a consequence of the reduction of prices for food and clothing. The allocations to purely military construction, item (2) are relatively small and therefore do not seriously affect the residue representing major procurements. Operation and maintenance (item (3) in the table) is a rough estimate which may be substantially in error. It is estimated at about one-fifth of the Soviet defense budget, whereas in the United States this item normally represents about one-third of the defense budget. Even if the fraction were raised to one-third for the USSR, the residue representing major procurement would continue to reflect the trend of rearmament; that is, the annual increments to procurement would not differ greatly, although they would be additive to a smaller initial basis.

In Table 5 the residues representing major procurements are roughly corrected by an equipment price index to reflect changes in the purchasing power of the defense ruble.

Table 5

Indexes of Major Soviet Military Procurements 10/

Year	Procurements in Current Prices (Billion Rubles)	Index of Prices of Equipment (1950 = 100)	Procurements in 1950 Prices (Billion Rubles)	Index of Procure- ments a/ (1950 = 100)	Chain Index of Procure- ments a/, b/
1947	23	102	23	51	
1948	29	105	28	62	122
1949	39	135	30	67	107
1950	45	100	45	100	150
1951	51 (59) c/	95	54 (62) c/	120 (138) c/	120 (138) c/
1952 Plan	74	95 d/	78	173	144 (126)

a. Computed directly from the figures given under the heading Procurement in 1950 Prices.

b. Figures for each year computed by using the preceding year as a base.

c. Figures in parentheses represent the Soviet plans for 1951. As the accompanying figures indicate, it does not appear that the funds planned for defense in 1951 were fully spent. Compare footnote 12.

d. Extended in 1952 without change from 1951. The movement of prices since 1951 is not known in enough detail to make an adjustment. However, the price reductions made in 1952 should mean greater purchasing power for the defense ruble.

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The index of procurements in Table 5 suggests that the most significant change in the rate of armament procurement is that scheduled for 1952. In the chain index of procurements, however, the change from 1949 to 1950 though lesser in absolute magnitude is relatively greater than the scheduled change from 1951 to 1952. The upshot of Table 5 is the conclusion that Soviet rearmament has increased progressively though unevenly since 1947.

The planned allocation to defense as shown in Table 5, which indicates a 38 percent increase for major procurements, would more than bear out the conclusion reached by the American Embassy, Moscow, to the effect that in 1951 the munitions component of the gross machinery index exceeded the 21 percent increase in gross machinery and munitions output as given in official statistics. ^{11/} There are indications, however, that the planned defense expenditures were not realized, since actual expenditure in 1951 fell short of the budget by over 10 billion rubles. ^{12/}

It is not clear that all of this shortfall can be attributed to defense. The allocations to the national economy were underspent by 1 billion rubles, which would leave a residual shortfall of 9 billion to be distributed among defense, administration and justice, and a miscellaneous category. Since the expenditures for administration and justice are fairly constant year by year, the residue must fall to the other two categories. In any event the indexes shown for 1951 may represent limits to the increase in defense procurements over 1950.

On the assumption that the Soviet real gross national product is currently expanding at the rate of 5 to 6 percent per year, it appears possible for the USSR to expand its outlays for procurements as suggested by Table 5 while still permitting a slight increase in consumption and maintaining gross investment at the rate achieved in 1951. The April 1952 price reductions were not so comprehensive as in other years, but when taken into consideration with the Soviet plans for taxation and state loans they suggest a small increase in aggregate consumption.

3. Indications of Rearmament in Reports of Plan Fulfilment.

The US Embassy's estimate that Soviet munitions output in 1951 was about 30 percent above 1950, ^{13/} lies near the middle of the range of 20 to 38 percent given in Table 5. It is not clear, however, that this increase was achieved at the expense of the output of trucks, tractors, transport equipment, and other investment goods as suggested by the Embassy. In particular, the Embassy's estimates of the indexes of machinery (not including munitions) and tractors and trucks must be taken as rough guesses, which they are acknowledged to be. ^{14/}

Table 6* indicates a relative abatement of the rate of expansion of Soviet capital investment in 1950 as compared with 1951. Whereas in 1950, the

* Table 6 follows on p. 10.

magnitude of over-all state investments according to the Soviet official index represents an increase of 23 percent over the preceding year, in 1951 the corresponding increase was only 12 percent. The principal gainers in 1951 were electric power construction, ferrous and nonferrous metallurgy, and construction materials. Significantly, the 1951 indexes are lower for transport and state agriculture; the indexes for light industry and for the food industry, which are not given in the table, also might perhaps be lower.

Table 6

Indexes of Soviet State Investments
for 1950 and 1951 15/

Item	1950 (1949 = 100)	1951 (1950 = 100)
Electric Power Construction	132	140
Ferrous and Nonferrous Metallurgy	116	120
Coal and Petroleum Industries	115	112
Machinery	109	110
Construction Materials	116	135
Transport	122	103
MTS and Sovkhozes	148	106
Dwelling Construction	118	120
Light and Food Industries	110	Not given
Over-all Investment	123	112

The investment data in Table 6 indicate a slackening of investment in transport but not an absolute fall. In a sense, therefore, the absence of specific Soviet indexes for freight cars, rails, and steam locomotives is indicative of new priorities in Soviet official policy, and may represent a substitution of defense production capacity expansion at the expense of possible expansion of transport. A fall in the annual rate of increase in investment, both generally and in certain individual sectors of the Soviet economy, could have been expected following the rapid recovery after World War II. Transport and agriculture have been rather consistently slighted in Soviet development policy, and by 1951 the Soviet planners may have felt that an adequate park had been attained in view of the possible alternative uses of capital resources.

Although the delivery of tractors to agriculture in 1951 was only about 70 percent of the preceding year's delivery, it is estimated that by 1951 the total draft power in agriculture somewhat exceeded the prewar level — about 23.5 million horsepower in 1951 as compared with 22.5 million horsepower

in 1940. 16/ With fewer horses and a correspondingly greater share of tractor power, perhaps somewhat more efficiently exploited, the fall in deliveries of tractors to agriculture in 1951 does not in itself appear critical. Table 7 suggests that the mechanization of Soviet agriculture progressed quite satisfactorily in 1951 and that the need for tractors to perform plowing had been met in full. The deliveries of combines in 1951 exceeded 1950, but ample scope for future expanded deliveries remains. The decline of deliveries of combines in the near future, therefore, could be regarded as indicative of diversion of production facilities to armaments, whereas the drop in deliveries of tractors perhaps can be explained on the basis of the adequacy of the existing park.

Table 7

Selected Data for Soviet Agriculture 17/

Item	1950	1951
Deliveries to Agriculture:		
Tractors (Thousand 15-horsepower Units)	180	137
Trucks (Thousand Units)	82	59
Combines (Thousand Units)	46	53
of Which, Self-propelled	23	29
Work Performed in Agriculture:		
Percent of Plowing in Kolkhozes by Tractors	90	Nearly 100
Percent of Grain Area in Kolkhozes Harvested by Combines	50	60
Percent of Field Work in Sovkhozes Performed by Mechanized Means		Nearly 100

The fact that deliveries of tractors and trucks to agriculture in 1951 were smaller than in 1950 does not necessarily mean that production of these items has decreased correspondingly to the advantage of armament production. There is some substitution between tractors and self-propelled combines, and the output of the latter increased in 1951. Moreover, when account is taken of other self-propelled agricultural machines, such as cotton pickers, tractors used in forestry operations, and bulldozers and other construction machinery utilizing tractor mounts, it is possible that there may be no decline in civilian output of tractor plants. This conclusion is indeed suggested by Table 8* for several other items as well, but the figures shown in this table must be taken with a certain reserve. They are based on CIA

* Table 8 follows on p. 12.

estimates, and some of the figures for 1951 represent extrapolations of past trends modified by assumptions whose validity may be open to question.*

Table 8

Indexes of USSR Production of Certain Items
1949-51 18/

Item	1949	1950 (1948 = 100)	1951	1950 (1949 = 100)	1951 (1950 = 100)
1. Trucks	130	169	196	130	116
2. Tractors	154	189	214	123	113
3. Locomotives	117	135	129	115	96
4. Rolling Stock	147	174	204	118	117
5. Machine Tools	119	133	138	112	104
6. Antifriction Bearings	108	113	117	105	104
7. Heavy Motors and Generators	112	125	140	112	112
8. Combat Air- planes a/	98	110	141	113	129
9. Tanks and Self- propelled Guns	144	144	144	100	100

a. The margin of error for the estimate of combat airplanes may be wide with extent unknown until more reliable information is developed.

A declining rate of increase of production of most items in 1951 as compared to 1950, as shown in Table 8, is consistent with the trend in over-all state investments shown in Table 6. Of the two items of traditional armaments shown, only one, combat planes, presents an increase for 1951 that is above the Soviet official estimate of a 21 percent increase in gross output of the machinery building industry as a whole. The absolute decline of locomotive output in 1951 is balanced to some extent by imports of locomotives from the European Satellites.

* Clearly, if these estimates and others pertaining to the output of various types of armaments could be taken with complete confidence, such inquiries as the present paper need not be undertaken. One could proceed with complete assurance to combine the output of particular items into various aggregative indexes by means of Soviet or other prices, depending on the end in view, and thus obtain measures of the changes that have occurred in various sectors of the economy over a period of time.

In view of the estimated 20 to 38 percent increase in Soviet armament procurement for 1951 shown in Table 5, it appears that the defense output at least kept pace with the over-all index of the machinery building industry and may have exceeded particular components of it by fairly wide margins. Since in most of the cases shown in Table 8, 1951 represents an absolute gain over 1950, any substitution of defense output for other items of the machinery building industry constitutes a restraint on the rate of development of the Soviet economy rather than a cutback below the previously attained level.

It is not uncommon in Soviet experience for industries as a whole to show annual rates of increase exceeding the rates of increase of leading components of their output expressed in physical units. This is in part a consequence of the concentration of the management of plants upon the output of the most profitable items to the relative neglect of less profitable, with the result that the plan may be fulfilled or overfulfilled in value terms but not necessarily for output in physical units of certain leading items. 19/ In addition, the Soviet practice of valuation of gross output includes capital construction and other work that an enterprise or ministry may perform on its own account. This would tend to swell aggregate production but would not necessarily mean that particular items would keep pace with the aggregate. Since the so-called fixed 1926-27 prices presumably have been abandoned for planning purposes, one can no longer ascribe to this faulty method of valuation the difference between gains in over-all output in value terms, on the one hand, and the increments in output of particular items in physical units, on the other hand.*

4. Direct Evidence of Increasing Armaments Production.

Such scattered information as is available does not directly show a very significant increase in the output of conventional armaments in 1949-1951. No major changes have been noticed in ammunition and weapons production. The output of tanks and self-propelled guns appears to have increased slightly, if at all. The output of combat planes appears to have risen modestly in 1950 and more substantially in 1951. 20/

The scanty information available relating to Communist aircraft production indicates that the Soviet Union has been striving to achieve greater readiness for war. Current USAF aircraft production estimates are based on the Soviet use of approximately 20 percent of estimated aircraft assembly plant capacity. Prototypes of new combat aircraft seen in air shows indicate Soviet emphasis on research and development. There is some evidence of the reconstruction of existing buildings in some of the aircraft assembly

* The current Soviet practice of valuation of production for planning and reporting purposes deserves a searching inquiry. It should lead to a better comprehension of what Soviet indexes represent and permit more complete analyses of the Soviet economy than are now possible.

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plants. 21/ Current estimates on the Soviet ammunition industry do not indicate any serious alteration in the long-term programs to achieve greater immediate war readiness, although limited conversions of civilian production to ammunition and revival of production in plants inactive since World War II have been reported. 22/

It is further reported that armament plants at Stalingrad, Leningrad, and Kharkov have been rebuilt since World War II, and a portion of their capacity returned to armament production, but this is not regarded as a serious alteration to achieve greater immediate readiness for war. 23/ In view of the lack of positive indications of serious expansion of output of conventional armaments, it appears that the expansion of Soviet efforts in this field is in considerable measure directed toward development of new types and the preparation of facilities to produce these in increasing numbers.

5. Direct Evidence of Diversion of Investment to Increase Armaments Production.

The Soviet official index of investment shows a marked tapering off of state investment from an annual increase of 23 percent in 1950 to 12 percent in 1951.* It has been suggested above that this represents in part a natural slowing down in expansion of productive capacity after the rapid recovery following World War II, and in part the competition of defense production for resources applicable to both fields. It appears that defense has been gaining relatively on state investment as a whole. The latter in 1951 shows an increase of only 12 percent over 1950 according to Soviet official statistics, whereas an analysis of budgets suggests at least a 20 percent increase for major defense procurements, and possibly more. An examination of particular industries 24/ suggests that the Soviet Bloc has failed to realize plans for the expansion of facilities for production of automotive equipment, but the main reason for this may be the increasing effects of Western embargoes on shipments of machinery to the Soviet Bloc. In some reports, the cutback of locomotive production in the USSR is associated with conversion to tank production, but this interpretation is perhaps offset by rising imports of locomotives from the Satellites. No signs have been noted that would suggest a change in the Soviet basic plan to raise coal output to about 500 million tons by 1960. Continued emphasis in this industry is placed on increasing the machine-man ratio, and this inference is supported by the investment data given above in Table 6. The electronics industry is notable in its need for expansion for either war or peace, and therefore it would be difficult to assign plant expansion to a policy shift favoring munitions production. It appears, however, that the civilian share of the industry's total output declined from an estimated 25 percent in 1949 to 16 percent in 1951, despite an increase in production capacity of about two-thirds in this period. 25/ Available information indicates that no serious alteration in the long-term investment program for merchant shipbuilding was made during the Fourth

* See Table 6, above.

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Five Year Plan (1946-50) to achieve greater immediate readiness for war, and that no such reduction is planned for the future.

In the field of construction there appears a continued strong impetus among designers to substitute reinforced concrete for steel in various constructions. The setting up of a new Main Administration for the Production of Reinforced Concrete Parts and Structures ^{26/} lends emphasis to the drive for economy in the use of steel. Savings of steel effected by such a measure obviously could be directed to peacetime investment or armament production. The continued high level of investment in ferrous and nonferrous metallurgy shown in Table 6 indicates continued application of the Stalinist thesis of socialist development via expansion of heavy industry.

6. Evidence from a Detailed Study of National Economic Accounts.

A detailed study of the flow of inputs and outputs through major industries of the USSR has not been completed, and therefore it is difficult to measure with any precision the magnitude of diversion of resources into research, development, and conversion programs. Indirect evidence -- namely, the comparative stability in production rates of conventional armaments coupled with the rising budget allocations to defense -- suggests that a very considerable part of the current Soviet defense effort is directed toward research, development of prototypes, and some conversion of production facilities for the output of newly developed military items.

7. Other Evidence.

Aside from the creation of the new organizational unit for production of reinforced concrete structures noted above, the shifts in the administrative organization of the Soviet economy are not considered indicative of stepped-up preparation for war. The appointment of Maksarev as head of the Ministry for Transport Machine Building is regarded as a normal promotion in view of his earlier service as director of a tank plant with the ministry's predecessor commissariat and his succeeding post as deputy minister with the present ministry.

The upward revision of the industrial targets in the national economic plans of the Soviet Satellites can be regarded as in keeping with their expressed twin aims of military preparedness and economic development via emphasis on heavy and engineering industries. In view of the extent of Soviet control over the Satellites, accretions to the military strength of the latter reinforce the Soviet rearmament effort. There is some evidence of Satellite production of component parts for larger armaments assembled in the USSR and of standardization of production of other military items on Soviet models. ^{27/}

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APPENDIX

SOURCES

1. Review of Internal Developments in the Soviet Union, December 1951 and January-February 1952, Internal Affairs Section, American Embassy, Moscow, p. 4.
2. See CIA/RR MP-89, Comparative Analysis of USSR Military Expenditures, 16 April 1952.
3. Rand Corporation, Staff Report, 1951, p. 3.
4. For ORR definition, see CIA/RR MP-89, cited above.
5. Figures for all years except 1951, taken from OIR, Department of State, Soviet Affairs, OIR Report No. 4800.39, March 1952, p. 32. The figure given for 1951 in this source is 96.4 billion rubles.
6. Hans Heymann, Jr., The Magnitude of Russia's Military Effort, Rand Corporation RM-746, 18 December 1951, p. 20.
7. The figure of 87.0 billion rubles, estimated allotment for the Soviet armed forces in 1951, is taken from Moscow Despatch from SANA, 8 March 1952, Joint Weeka 10, N. Ma 1418.
8. Hans Heymann, Jr., op. cit., p. 37. The figures for 1951 have been changed in keeping with an estimated actual explicit outlay of 87 billion rubles instead of a planned outlay of 96 billion (See footnote c, Table 3). The estimates for 1952 are the ORR allocations of the planned and estimated supplementary budget expenditures in keeping with the Rand assumptions.
9. Ibid. Heymann assumes 4.5 million troops in the armed forces in 1947 and 4.0 million in the subsequent years through 1951. The figure for 1952 is taken as 4.0 in extending Heymann's breakdown. These figures are not precise; however, a variation of a few hundred thousand would not seriously alter the series for major procurements which is obtained as a residual. In fact, the G-2, A-2, and ONI estimates for the period shown yield totals ranging from 4.0 to 4.2 million.
10. Ibid.
11. Moscow Despatch from SANA, cited above.
12. [REDACTED]
13. Internal Affairs Section, American Embassy, Moscow, op. cit., p. 3.
14. Ibid., p. 5.
15. Figures for 1950 from Planovoye Khoziaistvo No. 1, 1951, p. 13. Figures for 1951 from Voprosy Ekonomiki, No. 2, 1952, p. 9. The terms kapital'nye vlozheniia and kapital'nye raboty used in these sources are taken as synonymous. Cf. Norman Kaplan, Capital Investments in the Soviet Union 1924-1951, Rand Corporation RM 735, 28 November 1951.

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16. OIR, Department of State, Draft Power in Soviet Agriculture, Intelligence Report No. 5878, 17 April 1952.
17. Figures for 1950 are from Planovoye Khoziaistvo, No. 1, 1951, p. 12; figures for 1951, from Voprosy Ekonomiki, No. 2, 1952, pp. 7-8.
18. Items 1-7 from CIA/RR IP-295, OIR Contributions to NIE-64, 28 April 1952, TOP SECRET, p. 41. Items 8-9, OIR estimates, 16 May 1952.
- 25X1C8a 19. [REDACTED]
20. I/IP/RR to OAD, Memorandum, 17 April 1952, subject: Comments on Statement on NIE-64, Part I. See also CIA/RR IP-295, cited above, p. 15, TOP SECRET.
21. OIR, I/Air to I/P, Memorandum, 16 April 1952.
22. OIR, I/Armo to Acting Chief I/IP, Memorandum, 15 April 1952.
23. OIR, I/Weapons to Acting Chief, I/IP, Memorandum, 14 April 1952.
24. OIR, I/CG to I/IP, Memorandum, 14 April 1952.
25. OIR, I/EE to I/IP, Memorandum, 17 April 1952.
- 25X1A2g 26. [REDACTED]
27. CIA/RR IP-295 (Revised), 8 May 1952, p. 12, TOP SECRET. JIB 3/142, 24 March 1952, p. 6.